

**REMARKS**

An excess claim fee payment letter is submitted herewith for ten (10) excess total claims.

Claims 1-28 and 35-55 are all the claims presently pending in the application.

New claims 40-55 are added to provide more varied protection for the invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-28, 38, and 39 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Kagami, et al. (Japanese Patent No. 2000-347043; hereinafter "Kagami - JP").

Claims 1-28, 38, and 39 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,703,188 to Kagami (hereinafter "Kagami '188", which matured from U.S. Application No. 09/534,458).

Claims 1-28, 38, and 39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kagami - JP in view of Kawabata, et al. (U.S. Patent No. 5,665,494; hereinafter "Kawabata"), or alternatively, over Kagami '188 in view of Kawabata.

Claims 35-37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 08-320422, in view of Anderson '702 and Kagami - JP.

Claims 1-28, 38, and 39 allegedly conflict with claims 1-8 and 11 of Kagami '188 under 37 C.F.R. § 1.78(b).

Claims 1-28, 38, and 39 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 and 11 of Kagami '188 in view of Houlihan, et al. (U.S. Patent No. 6,204,304; hereinafter "Houlihan") and Kawabata.

Applicants traverse each of the rejections as follows.

## **I. THE CLAIMED INVENTION**

Unlike conventional methods, the present invention includes a method of manufacturing an optical transmission device in which one of the first polymerization type and the second polymerization type includes radical polymerization, and the other includes cationic polymerization (as recited in claim 1), or in which the first irradiation has an amount of exposure more than the minimum amount of exposure required to harden the first photosetting resin substantially completely and smaller than the maximum amount of exposure not to harden the second photosetting resin completely (as recited in claim 15).

In addition, Applicant's invention includes a method of forming an optical transmission device within an optical transmission and reception module, the method including introducing a light beam of a predetermined wavelength for formation of the optical transmission device into a space area for forming the optical transmission device within the optical transmission and reception module to harden a photosetting resin solution in an optical axis direction.

These novel features of the invention allow it to fabricate a cylindrical core portion of an optical transmission device more effectively and efficiently than conventional methods (e.g., see specification at page 2, lines 1-7).

## II. THE PRIOR ART REJECTIONS

Claims 1-28, 38, and 39 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Kagami - JP. Claims 1-28, 38, and 39 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,703,188 to Kagami '188. Claims 1-28, 38, and 39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kagami - JP in view of Kawabata, or alternatively, over Kagami '188 in view of Kawabata. Claims 35-37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 08-320422, in view of Anderson '702 and Kagami - JP.

For the following reasons, Applicants respectfully reiterate their traversal of these rejections.

The Examiner takes the position that Kagami - JP and Kagami '188 inherently (i.e., necessarily) disclose that the acrylic monomers undergo free radical polymerization and the epoxy monomers undergo cationic polymerization.

For inherency, Applicants reiterate that, as a matter of law, if the reference is silent on the issue, then all that is required is that another possibility exists, not that such a possibility would (or would not) be the preferable choice.

Applicants respectfully reiterate their position that the Kagami '188 reference and the Kagami - JP reference do not inherently (i.e., do not necessarily) disclose that the acrylic monomers undergo free radical polymerization and the epoxy monomers undergo cationic polymerization. That is, Applicant submits that Kagami does not specifically disclose or suggest different polymerization mechanisms between the first polymerization type and the second polymerization type.

In Kagami, the epoxy resin solution is not necessarily (i.e., inherently) polymerized by cationic polymerization, and the acrylic resin solution is not necessarily polymerized by radical polymerization. Applicants submit that, although it may be argued that cationic polymerization is the preferred polymerization mechanism, cationic polymerization is not the only, or necessary, polymerization mechanism that can be used in Kagami, since it is possible to polymerize epoxies through other mechanisms.

Thus, absent a specific disclosure in the Kagami reference that the epoxy monomers described in Kagami must undergo cationic polymerization, Applicants respectfully reiterate that Kagami does not inherently or explicitly disclose all of the features of the claimed invention, as a matter of law.

#### **New Claims Based on Examiner's Suggestions**

However, in the interest of expediting prosecution and allowance of the present invention, Applicants add new claims 40-55 to define more clearly the features of the present invention, in accordance with the Examiner's kind suggestions in the personal interview conducted on June 1, 2006.

For example, in the interview, the Examiner kindly noted that the process disclosed in example 1, 488 nm are used as the laser light and 325 nm is used to cure both monomers. The Examiner stated that this suggests two photoinitiators in addition to the two monomers (one for sensitization at each wavelength). The Examiner also stated that this sensitivity to 488 nm suggests the presence of photosensitizers, similar to those discussed in the secondary reference, Kawabata. The Examiner also stated that the independent claims do not include the above limitations.

In the June 1, 2006 interview, the Examiner kindly suggested that Applicants' may choose to exploit the above distinction between the present invention and the prior art of

record by including language describing the composition being sensitized for 488 nm or the process using the 488 nm laser for the first exposure.

The Examiner noted that the description of photosensitizers in the instant specification appears at [0113] of the prepublication and the 488 nm laser at [0115] of the prepublication.

Therefore, to expedite prosecution of the present invention, Applicants add new claims 40-55 to define more clearly the features of the present invention, in accordance with the Examiner's kind suggestions in the personal interview conducted on June 1, 2006.

For example, new claim 40 is added to recite that the "*wavelength of said first irradiation includes 488 nm*" and new claim 41 is added to recite that the "*wavelength of said second irradiation includes 385 nm*" (e.g., see specification at page 41, lines 3-15).

The present invention explains that, as illustrated in Figure 2, at a wavelength  $\lambda_w=488$  nm, the absorption characteristics for the resins A and B are greatly different. This means that the wavelengths for activating the photopolymerization initiators for two kinds of photosetting resins are different. In this way, employing two kinds of photosetting resins that are not copolymerized and have different activation wavelengths of the photopolymerization initiators for hardening, the core portion can be only formed by hardening the photosetting resin with higher refractive index under the intermediate wavelength between two wavelengths, if the activation wavelength of the photopolymerization initiator of the photosetting resin with higher refractive index after hardening is longer than the activation wavelength of the photopolymerization initiator of the photosetting resin with lower refractive index after hardening. Thereafter, two kinds

of photosetting resins that become the clad portion can be hardened to form the optical transmission device (e.g., see specification at page 42, lines 9-25, and page 43, lines 1-4).

New claim 42 is added to recite that the “*wavelength of said first irradiation includes 650 nm*” and new claim 43 is added to recite that the “*wavelength of said second irradiation includes 520 nm*” (e.g., see specification at page 57, lines 18-25).

New claim 44 is added to recite that the “*first photopolymerization initiator comprises a radical photopolymerization initiator*”. New claims 45-47 are added to recite the specific examples of the radical photopolymerization initiators disclosed in the present application, including a combination of a plurality of such initiators (e.g., see specification at page 11, lines 19-23; and pages 38-39, bridging paragraph).

New claim 48 is added to recite that the “*second photopolymerization initiator comprises a cationic photopolymerization initiator*”; and more particularly, new claims 49 and 50 are added to recite the specific examples disclosed in the present application (e.g., see specification at page 11, line 25, and page 12, lines 1-4; and page 39, lines 12-15).

New claims 50-55 also are added to depend from independent claim 15.

For example, new claim 51 is added to recite that the “*wavelength of said first irradiation includes 385 nm*” and new claim 52 is added to recite that the “*wavelength of said second irradiation includes 385 nm*” (e.g., see specification at page 43, lines 7-25, and page 44, lines 1-2).

New claim 53 is added to recite that the “*amount of exposure of said first irradiation includes 30 mJ/cm<sup>2</sup>*” and new claim 54 is added to recite that the “*amount of exposure of said second irradiation includes 60 mJ/cm<sup>2</sup>*” (e.g., see specification at page 43, lines 7-25, and page 44, lines 1-2).

New claim 55 is added to recite that the “*a sensitivity of said first photopolymerization initiator for the first photosetting resin is different than a sensitivity of said second photopolymerization initiator for the second photosetting resin*” (e.g., see specification at page 45, lines 4-9).

The present application discloses that, in this way, employing two kinds of photosetting resins that are not copolymerized and have different amounts of exposure for hardening, the core can be only formed by hardening the photosetting resin with higher refractive index after hardening due to a difference between two amounts of exposure, if the minimum amount of exposure for hardening completely the photosetting resin with higher refractive index after hardening is less than the maximum amount of exposure for not hardening the photosetting resin with lower refractive index. Thereafter, two kinds of photosetting resins that become the clad are hardened to form the optical transmission device (e.g., see specification at page 45, lines 1-19).

Applicants submit that new claims 40-55 are patentable over the cited prior art of record, at least by virtue of their dependency from independent claims 1 and 15, as well as for the additional features recited therein, which are not disclosed or suggested by the cited prior art, either individually or in combination.

Therefore, the Examiner is requested to permit claims 40-55 to pass to immediate allowance.

### **III. REJECTION UNDER 37 C.F.R. § 1.78(b)**

Claims 1-28, 38, and 39 allegedly conflict with claims 1-8 and 11 of Kagami '188 under 37 C.F.R. § 1.78(b).

Applicants respectfully reiterate that claims 1-28, 38, and 39 do not conflict with claims 1-8 and 11 of Kagami '188, as alleged.

For example, the claims of Kagami '188 do not disclose or suggest at least that *“one of said first polymerization type and said second polymerization type comprises radical polymerization, and the other comprises cationic polymerization”*, as defined by independent claim 1.

Thus, claims 1-28, 38, and 39 do not conflict with claims 1-8 and 11 of Kagami '188, and therefore, the Examiner is requested to withdraw this rejection.

#### **IV. DOUBLE PATENTING REJECTION**

Claims 1-28, 38, and 39 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 and 11 of Kagami '188 in view of Houlihan and Kawabata.

With respect to the double patenting rejection, applicants gratefully acknowledge that, in the interview conducted on June 1, 2006, the Examiner stated that the assignment seems to be to different companies. However, the Examiner noted that it was not clear to the Examiner whether Toyoda Gosei Co., Ltd. and Kabushiki Kaishi Toyota Chuo are wholly owned subsidiaries of a holding company or the like, or entirely separate entities. The Examiner stated that there seems to be some relationship based upon common research interests.

Applicants reiterate that the present invention and Kagami '188 are assigned to different companies as evidenced in the official record of the U.S. Patent Office.

As further evidence that Toyoda Gosei Co., Ltd. and Kabushiki Kaishi Toyota Chuo are different companies, for purposes of 35 U.S.C. § 103(c), Applicants submit



herewith copies of web pages showing the relationship between Toyoda Gosei and Toyota Central R&D Labs:

<http://www.tytlabs.co.jp/english/comp/outline02.html>

<http://www.tytlabs.co.jp/english/tech/sys01.html>

[http://www.tytlabs.co.jp/english/tech/e\\_sys\\_jikokeisei.pdf](http://www.tytlabs.co.jp/english/tech/e_sys_jikokeisei.pdf)

As shown in the attached printed web pages, Toyoda Gosei Co., Ltd. is a technical collaboration contractor, as indicated by the Toyota Central R&D Labs company profile and the identification of "Joint Research with Toyoda Gosei Co., Ltd." on the System Engineering & Electronics web page, as well as the Self-Formation of Three-dimensional Optical Circuit (.pdf).

Accordingly, Applicants respectfully reiterate that Toyoda Gosei Co., Ltd. and Kabushiki Kaishi Toyota Chuo are not commonly assigned, for purposes of 35 U.S.C. § 103(c), and therefore, requests that the Examiner withdraw this rejection.

## **V. CONCLUSION**

In view of the foregoing, Applicants submit that claims 1-28 and 35-55, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.


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(NGB.196)

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The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

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